LUMINESCENT MATERIAL FOR SCINTILLATORS COMPRISING SINGLE CRYSTAL OF Yb-CONTAINING MIXED-CRYSTAL OXIDE

CLAIMS

Claim 1. A luminescent material for scintillators, comprising a single crystal of an Yb-containing mixed-crystal oxide which has a composition represented by either one of $R_3Al_5O_{12}$, $R_3Ga_5O_{12}$ and $Li_6R(BO_3)_3$, wherein R is a mixture of Yb and either one of Y, Gd and Lu, and said Yb as an element capable of forming an optically active state called CTS together with a neighboring negative ion (oxygen ion).

Claim 2. A luminescent material for scintillators, comprising a single crystal of an Yb-containing mixed-crystal oxide which has a composition represented by either one of $Li_3R_2Ga_3O_{12}$ and $Gd_3R_2Ga_3O_{12}$, wherein R is a mixture of Yb and either one of Y, Gd and Lu, and said Yb as an element capable of forming an optically active state called CTS together with a neighboring negative ion (oxygen ion).

Claim 3. The luminescent material as defined in claim 1 or 2, wherein the molar ratio of either one of Y, Gd and Lu to Yb in said R satisfies the conditions expressed by the following formulas:

$1.04x + 1.02y \leq 1.03$;

$x + y = 1$;

$0 < x < 1$; and

$0 < y < 1$,

wherein x is a molar ratio of Yb, and y is a molar ratio of either one of Y, Gd and Lu.